Claims

1. A screening device, comprising:

a frame shaped to be engageable to a head between a reference location, at least one ear and a signal detection location;

a reference electrode attached to the frame at the reference location;

a signal electrode attached to the frame at the auditory processing location;

an auditory signal producer positioned by the frame over the ear; and

an auditory evoked response (AER) data processor operably configured to initiate an auditory signal from the auditory signal producer and to perform a signal processing operation on an AER signal sensed across the reference and signal electrodes.

2. The screening device of claim 1, further comprising a cantilevered flexible arm connecting the signal electrode to the frame.

3. The screening device of claim 1, further comprising a second signal electrode attached to the frame.

4. The screening device of claim 3, further comprising a multiplexing channel controlled by the AER data processor for selectively sampling the first and second signal electrodes.

5. The screening device of claim 3, wherein the AER data processor is further operatively configured to sample the first signal electrode at a low frequency sampling rate and to sample the second signal electrode at a high frequency.

6. The screening device of claim 5, further comprising a multiplexing channel controlled by the AER data processor for selectively sampling the first and second signal electrodes.

7. The screening device of claim 3, further comprising a flexible printed circuit harness containing the electrodes and communication paths to the AER data processor and shaped for conforming to the head under the resilient urging of the frame.

8. The screening device of claim 1, further comprising a test subject identification device, the AER data processor further operably configured to associate a test subject identification with the AER signal.

9. The screening device of claim 8, wherein the test subject identification device comprises a barcode scanner.

10. The screening device of claim 8, wherein the test subject identification device comprises a radio frequency identification scanner.

11. The screening device of claim 1, further comprising a diagnostic analyzer operably configured to characterize the AER signal and to compare the characteristics to a predetermined dyslexic AER characteristic.

12. The screening device of claim 11, further comprising a communication link, wherein the diagnostic analyzer is coupled to the frame via the communication link.

13. The screening device of claim 1, wherein the AER data processor comprises a control module integral to the frame.

14. The screening device of claim 1, wherein the frame includes a disposable portion that includes the electrodes.

15. The screening device of claim 1, wherein the AER data processor includes digital storage configured to store the AER data.

16. The screening device of claim 1, wherein the AER data processor is further operably configured to perform a sequence of screening tests, and to store in the digital storage AER data associated with each test.

17. The screening device of claim 16, wherein the digital storage further includes a predetermined test protocol.

18. The screening device of claim 1, wherein the AER data processor is further operably configured to generate a user indication of a test condition.

19. The screening device of claim 1, wherein the frame is operably shaped to connect between the ears across a front portion of a patient's head.

20. The screening device of claim 1, wherein the frame comprises a recurved frame and a pair of ear cups attached to each end thereof.

21. The screening device of claim 1, wherein the frame comprises an ear cup having a resilient portion inwardly affixed thereto.

22. The screening device of claim 1, wherein the frame further comprises an ear cup having an electrode registered caudad to the sylvan fissure of a subject.

23. A method of performing auditory evoked response (AER), comprising:
positioning a device on the head of a subject, the device positioning a sound producer, a reference electrode and a signal electrode;
generating an auditory stimulus;
recording AER data across the reference and signal electrodes.

24. The method of claim 23, wherein recording the AER data further comprises:
storing the AER data on the device;
connecting the device to a data analyzer;
transmitting the stored AER data to the data analyzer.

25. The method of claim 23, wherein positioning the device on the head of the subject further comprising positioning the subject face up and positioning the device across a forward portion of the subject's head.

26. The method of claim 23, wherein generating the auditory stimulus further comprises:
in response to determining the sensed electrode voltage exceeding a threshold, imposing a sampling delay in pursuit of a resting brain state.

27. The method of claim 23, wherein generating the auditory stimulus further comprises:
detecting a resting brain wave; and
initiating the auditory stimulus at a predetermined slope of the resting brain wave.

28. The method of claim 23, further comprising:
in response to determining the AER data to contain an artifact, imposing a sampling delay and repeating an epoch of auditory stimulus and sampling AER data.

29. The method of claim 23, further comprising:
accessing a remotely stored auditory testing protocol into the device; and
disconnecting the device prior to positioning a device on the head of the subject.

30. The method of claim 23, wherein the device positions the reference electrode, low frequency signal electrode and a high frequency signal electrode, the method further comprising sampling the low frequency signal electrode at first sampling rate and sampling the high frequency signal electrode at a higher second sampling rate.

31. The method of claim 23, wherein the device positions the reference electrode, a first signal electrode and a second signal electrode, and whereinsampling the first and second frequency signal electrodes further comprises for each electrode:
sensing an EEG voltage;
converting the sensed voltage to a digital value;
sampling the digital value at a predetermined sampling rate over a multiplexing channel; and
recording the multiplexed digital data.

32. The method of claim 31, wherein sampling the digital value at a predetermined sampling rate over the multiplexing channel comprises further comprises sampling the first signal electrode at low frequency and sampling the second signal electrode at a high frequency.